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ABSTRACT

This document provides a discussion of the relationships in Individually Guided Education (IGE) schools between the organizational and instructional features of schools and the mathematics achievement of second- and fifth-grade students. The theoretical positions that are part of the IGE model--some of them explicit and some of them implicit but evident--imply what some of the relationships should be. Thus, it was possible to form a theoretical model of how variations in different organizational and instructional features would be linked, and how, in turn, those variations would be linked to variations in achievement. This report presents that theoretical model and evaluates how adequately it fits data obtained from schools. The results of the causal analysis used suggest that the instructional and organizational features, as measured in this study, are not able to account for much of the variance associated with second- and fifth-grade mathematics achievement. (Author)

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Technical Report No. 511

Organizational and Instructional Features that Affect Grade 2 and Grade 5 Mathematics Achievement in IGE Schools

by Gary G. Price, Terence C. Janicki, Herbert C. Van Deventer, Jr., and Thomas A. Romberg

April 1980

Wisconsin Research and Development Center for Individualized Schooling

Technical Report No. 511

ORGANIZATIONAL AND INSTRUCTIONAL FEATURES THAT AFFECT GRADE 2 AND GRADE 5 MATHEMATICS ACHIEVEMENT IN IGE SCHOOLS

by

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Herbert C. Van Deventer, Jr., and Thomas A. Romberg

Report from the Project on
Evaluation of Practices in Individualized Schooling

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April 1980

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- conducting and synthesizing research to clarify effective approaches to teaching students basic skills and concepts
- developing and demonstrating improved instructional strategies, processes, and materials for students, teachers, and school administrators
- providing assistance to educators which helps transfer the outcomes of research and development to improved practice in local schools and teacher education institutions

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Abstract

This document provides a discussion of the relationships in IGE schools between the organizational and instructional features of schools and the math achievement of second- and fifth-grade students. The theoretical positions that are part of the IGE model--some of them explicit and some of them implicit but evident--imply what some of the relationships should be. Thus, it was possible to form a theoretical model of how variations in different organizational and instructional features would be linked, and how, in turn, those variations would be linked to variations in achievement. This report presents that theoretical model and evaluates how adequately it fits data obtained from schools. The results of the causal analysis used suggest that the instructional and organizational features, as measured in this study, are not able to account for much of the variance associated with second- and fifth-grade math achievement.

This document provides a discussion of the relationships in Individually Guided Education (IGE) schools between the organizational and instructional features of schools and the mathematics achievement of second- and fifth-grade students. The document presents data collected by the large sample survey component of the IGE evaluation, referred to hereafter as Phase I. The theoretical positions that are part of the IGE model--some explicit and some implicit but evident--imply what some of the relationships should be. Thus, we were able to develop a theoretical model of how variations in different organizational and instructional features would be linked, and how, in turn, those variations would be linked to variations in achievement. This report presents that theoretical model and evaluates how adequately it fits data obtained from schools.

The purpose of Phase I, as with the other IGE evaluation phases, is to gain a more comprehensive view of the model's operation and effectiveness. The basic objective is to identify features of IGE schooling that contribute to successful instruction, especially in reading and mathematics. The identification of such features is critical to evaluating IGE as an educational system; it is also integral to understanding schooling in general.

Certain features of IGE schooling have a reputation as keys to the program's success. Phase I examines variations in the extent to which these presumably essential features have been implemented

among IGE schools, and assesses how influential such variations in implementation are. As a large sample study (including approximately 155 IGE schools), Phase I provides basic information about IGE features, processes, and outcomes by relating a broad scope of variables in an interpretive manner. The variables are measures of organizational features, instructional features, student achievement, staff job satisfaction, and other characteristics of students and staff. The specific purposes of Phase I are:

1. to determine the degree to which the seven IGE components have been implemented in IGE schools;

2. to describe and examine the relationship between the implementation of IGE components and means of instruction, particularly in reading and mathematics;

3. to describe and examine the relationship between the implementation of IGE conponents and staff outcomes; and

4. to describe and examine the relationship--presumably by way of the means of instruction--between the implementation of IGE components and pupil outcomes. This includes such outcomes as reading and mathematics achievement, selected cognitive skills, and aspects of personality development.

The means of instruction and outcome variables of this study are, without question, influenced by multiple, simultaneous causes that resist easy description. Since causal relationships are easier

to study in isolation, most research has examined only one or a few of these relationships. Simple comparisons between IGE as an undifferentiated package and other educational alternatives provide us with little information about specific features and processes that occur in IGE schools. Therefore, Phase I simultaneously examines relationships among the network of variables believed to influence means of instruction, staff outcomes, and pupil outcomes--thereby advancing understanding of each IGE feature and the network of variables as a whole.

Phase I of the IGE evaluation is not a direct comparison between IGE schools and other schools; rather, it is an assessment of certain fundamental and empirically testable premises on which IGE is based. The three kinds of premises are listed below:

1. Certain organizational features make it more likely that desirable instructional practices will occur and that the staff will be satisfied with their jobs.

2. The use of certain curriculum materials, associated systems of information collection, and record keeping makes it more likely that desirable instructional practices will occur.

3. Those instructional practices deemed desirable in IGE schools make high student achievement more likely (Klausmeier, Karges, & Krupa, 1977). They also increase the possibility that desirable changes in other student characteristics, such as self-perception and locus of control, will occur.

The Phase I study evaluates premises of the kind listed above by assessing the relationships they imply. This approach to evaluation would not be feasible if IGE schools had uniformly implemented the organizational features, curriculum features, and instructional practices suggested by experts in IGE. Such uniformity, however, does not exist, as is apparent from the distributions of variables. Phase III of the evaluation, a field study of a few highly reputed IGE schools, provides corroborating evidence that IGE schools are not uniform. In Phase III, marked variability was found even among schools reputed to be exemplary IGE schools.

For the purposes of this study, the fundamental premises listed above have been represented as a network of postulated causal links among the variables of the study. Figure 1 presents these causal links in diagram form. It shows the paths of influence assumed to underlie the relationships between mathematics achievement and the other variables studied. An IGE theory of how each variable is causally related to the other variables is expressed.

The diagram is known as a structural model, structural diagram, path diagram, or causal model, and follows certain graphic conventions. According to these conventions, a straight, unidirectional arrow signifies that the variable at its base directly influences the variable at its tip. The omission of an arrow constitutes an explicit theoretical statement that no direct causal relationship exists. A variable is an indirect cause of a dependent variable if a path

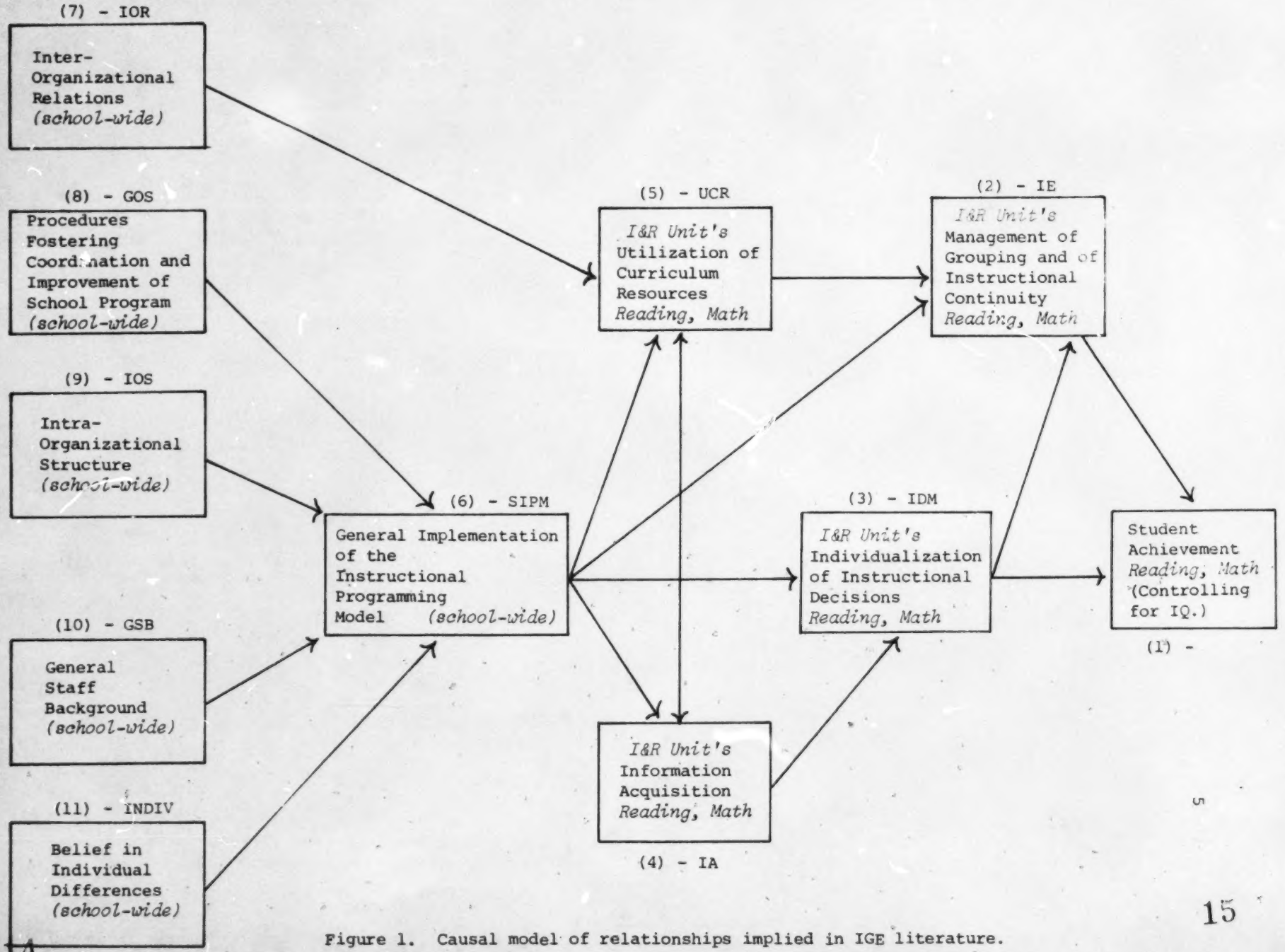
(7) - IOR
Inter-Organizational Relations (school-wide)
(8) - GOS
Procedures Fostering Coordination and Improvement of School Program (school-wide)
(9) - IOS
Intra-Organizational Structure (school-wide)
(10) - GSB
General Staff Background (school-wide)
(11) - INDIV
Belief in Individual Differences (school-wide)
(6) - SIPM
General Implementation of the Instructional Programming Model (school-wide)
(5) - UCR
I&R Unit's Utilization of Curriculum Resources Reading, Math
(2) - IE
I&R Unit's Management of Grouping and of Instructional Continuity Reading, Math
(3) - IDM
I&R Unit's Individualization of Instructional Decisions Reading, Math
(4) - IA
I&R Unit's Information Acquisition Reading, Math
Student Achievement Reading, Math (Controlling for IQ.)
(1) -

Figure 1. Causal model of relationships implied in IGE literature.

through two or more arrows can be traced from the dependent variable back to the first variable. Associated with each straight arrow is a nonzero value. The sign of the value denotes whether an increase in the causal variable produces an increase (plus) or a decrease (minus) in the dependent variable. A curved, bidirectional arrow is used at the left of the figure between variables which are known to be correlated, but for reasons not covered in the scope of the model.

A system of structural equations corresponds to the model. These equations may be statistically examined for their agreement with the data collected in the Phase I study. Within the limits imposed by measurement error in the group-administered, standardized tests and questionnaires used to collect the data, this approach tests the theoretical model that underlies IGE. If the relationships between variables are not consistent with Figure 1, then probable inaccuracies in the underlying IGE model will be revealed. On the positive side, this approach can indicate important features and processes which deserve more attention from schools implementing IGE. In this context, "importance" means that a feature or process influences outcomes that are socially valued.

Rationale for the Structural Model

Factors influencing student achievement. The following discussion refers to the model presented in Figure 1. Student achievement in mathematics is thought to be directly influenced by four factors. Two

are practices over which teachers in Instruction and Research (I&R) units have some control; the variables reflecting these practices are Management of Grouping and Instructional Continuity (IE) and Individualization of Instructional Decisions (IDM). The other two sources of influence are reflected by the variables Students' Scholastic Ability (IQ) and Demographic Background (DB); both are relatively unaffected by the organizational features and instructional practices of schools. The school's demographic setting (DB), a covariate of student achievement, serves as an index of pre-existing differences among students which may affect student achievement. The relationships of IQ and DB to mathematics achievement are statistically controlled so they do not obscure the influence of organizational and instructional features.

The IGE model suggests that the organization of classroom instruction should have an effect on student achievement. The Instructional Programming Model (IPM) is used to group students according to their individual needs, making teacher-student instructional interactions more effective. The variable Management of Grouping and Instructional Continuity (IE) measures several facets of the classroom instructional environment and should, according to the IGE model, be directly related to student learning.

The variable Individualization of Instructional Decisions (IDM) measures the extent to which instructional decisions take the individual

needs of the student into account. Taking individual student needs into account is fundamental to the IGE model. Therefore, this variable is expected to be directly related to student achievement. Moreover, IDM has a further, indirect influence, because we anticipate it to make Management of Grouping and of Instructional Continuity (IE) easier. IE, as mentioned above, is directly related to student learning.

Factors influencing IE. The model suggests that three features, two instructional and one organizational, should directly benefit the I&R unit's Management of Grouping and of Instructional Continuity (IE). As just mentioned, effective Individualization of Instructional Decisions (IDM), an instructional feature, should benefit IE. The Utilization of Curriculum Resources (UCR) is another instructional feature that should facilitate effective Management of Grouping and of Instructional Continuity (IE). The General Implementation of the Instructional Programming Model (SIPM) in the school as a whole, an organizational feature, should affect IE both directly and indirectly.

Factors influencing IDM. The IGE model suggests that the amount and variety of student information available, reflected by the variable Information Acquisition (IA), should directly influence the Individualization of Instructional Decisions (IDM). The model also suggests that SIPM should promote such individualization. The procedures needed for efficient and useful information acquisition are presumably limited

by incomplete school-wide implementation of the Instructional Programming Model (IPM).

Factors influencing UCR. The Utilization of Curriculum Resources (UCR) by an I&R unit depends on other practices of that unit and on qualities of the school itself. An I&R unit practice that affects the unit's UCR is the amount and variety of information acquired about students, designated by the variable Information Acquisition (IA). I&R unit staff with information about students are more likely to use a wide variety of curriculum resources. Inasmuch as the IPM invites the use of a variety of curriculum materials, the variety used should be affected by the school-wide General Implementation of the Instructional Programming Model (SIPM). A second school characteristic which presumably affects the UCR is how much contact the school has with other schools--especially IGE schools. The variable Interorganizational Relations (IOR) is a measure of the extent of contact. Schools that have active relationships with other IGE schools can become familiar with the curriculum resources those schools found useful.

Factors influencing SIPM. The level of Implementation of the Instructional Programming Model (SIPM) on a general, school-wide basis is a key characteristic mediating the influences of the school's organizational features on the I&R unit's specific instructional variables. It is appropriate that the key feature in the IGE model, the

IPM, should occupy a central position in the structural model. Two organizational features have been presented in the IGE literature as creating an organizational environment conducive to the IPM. The first is the assortment of activities collected under the heading Procedures Fostering Coordination and Improvement of the School Program (GOS). The second, reflected by the variable Intra-Organizational Structure (IOS), is the collection of structural arrangements distinctive to IGE schools, such as organization into I&R units, the existence of an Instructional Improvement Committee (ICC), and so forth.

SIPM also depends on the background and beliefs of the school staff. The influence of organizational features would be difficult to assess if the role of such staff factors were not considered simultaneously. Consequently, the model includes two variables, one a measure of General Staff Background (GSB), and the other a measure of teachers' Belief in Individual Differences (INDIV).

Analysis and Results

This technical report examines features of IGE schools believed to affect mathematics achievement. Second, it examines links between organizational features and the instructional practices they were meant to facilitate. Unfortunately, the positive relationships between features of IGE schools and students' mathematics achievement that we expected did not result. In grade 2 I&R units, no organizational

variable and no measure of instructional practices are correlated beyond a trivial level with the measure of mathematics achievement. Only General Implementation of the Instructional Programming Model (SIPM) has a statistically significant zero-order correlation with the mathematics achievement measure.

The results in grade 5 I&R units are just as negative. Every variable is correlated only trivially with the mathematics achievement variable. Not a single correlation differs from zero with statistical significance. Accordingly, the structural equation analysis lends no empirical support to hypothesized paths of influence.

This negative finding may, in part, indicate faults in our measurement of organizational features and instructional practices. However, not all of the blame can be placed on noise in the measures since ratings of organizational features made by field observers in 30 schools showed reasonably high correlation with the questionnaire-based scales (IOR, .66; GOS, 153; IOS, .60; SIPM, .67). We have less assurance that our measures of instructional practices are helpful.

In addition, the standardized, group-administered measure of mathematics achievement can be criticized as a less-than-perfect indicator of what children know about math. The test may have some sections that do not reflect the curriculum of the schools in our study. On the whole, however, it seems to be a reasonable assessment of mathematics. Other information we have indicates that the test scores are reasonably accurate. Different demographic classifications of schools,

for example, show differences on the mathematics achievement measure that closely parallel the findings in the National Assessment of Educational Progress.

Analysis and Results: Organizational Features and Instructional Practices

A Priori Model

The subsequent discussion examines links between organizational features and the instructional features they were meant to facilitate. Analysis began with an estimation of the a priori model. The initial estimation procedure was a straightforward application of multiple regression. The correlation matrix of variables used in the regression analysis is given in Tables 1 and 2. Means and standard deviations of these variables are given in Table 3. Each endogenous variable was regressed on its theorized causes. Endogenous variables, i.e., variables under the influence of other variables in the model, have at least one straight arrow pointing toward them in a causal diagram. Exogenous variables are those not under the influence of other variables in the model. Figure 1 shows the estimated model for student mathematics achievement.

Adjacent to each path in Figures 2 and 3 are path coefficients which are standardized multiple regression coefficients. These coefficients were subjected to a statistical test, and hypothesized

Table 1

Second-grade Mathematics Correlation Matrix

	IOR	GOS	IOS	GSB	INDIV	SIPM	UCRMATH	IAMATH	IDMMATH	IEMATH	ACH.-MATH
IOR	1.00000	.71466	.44814	.20143	.41253	.60001	.05461	.18512	.09937	.07139	.08778
GOS	.71466	1.00000	.55011	.21978	.48348	.72135	.18196	.28016	.23457	.14405	.08633
IOS	.44814	.55011	1.00000	.26179	.21382	.47757	.04341	.17778	.22372	.14559	.06342
GSB	.20143	.21978	.26179	1.00000	.16407	.26125	.08216	.10369	.07899	.07569	.07185
INDIV	.41253	.48348	.21382	.16407	1.00000	.48116	.16589	.33295	.18472	.17832	.13485
SIPM	.60001	.72135	.47757	.26125	.48116	1.00000	.12369	.30899	.22697	.18694	.25525
UCRMATH	.05461	.18196	.04341	.08216	.16589	.12369	1.00000	.12524	.06024	.01940	-.05999
IAMATH	.18512	.28016	.17778	.10369	.33295	.30899	.12524	1.00000	.16786	.27100	.03532
IDMMATH	.09937	.23457	.22372	.07899	.18472	.22697	.06024	.16786	1.00000	.32554	.10130
IEMATH	.07139	.14405	.14559	.07569	.17832	.18894	.01940	.27100	.32554	1.00000	.00362
ACH.-MATH	.08778	.08633	.06342	.07185	.13485	.25525	-.05999	.03532	.10130	.00362	1.00000

Table 2

Fifth-grade Mathematics Correlation Matrix

	IOR	GOS	IOS	GSB	INDIV	SIPM	UCRMATH	IAMATH	IDMMATH	IEMATH	ACH.-MATH
IOR	1.00000	.71639	.43572	.20529	.41859	.59756	.10950	.16362	.10836	.10236	.13695
GOS	.71639	1.00000	.56143	.22674	.45592	.72322	.20235	.14873	.09788	.02448	-.00995
IOS	.43572	.56143	1.00000	.30089	.18134	.46674	.02094	.11683	.18035	.03116	-.06048
GSB	.20629	.22674	.30089	1.00000	.14926	.24033	.08060	.01612	.20125	-.08289	-.01086
INDIV	.41859	.45592	.18134	.14926	1.00000	.44370	.15819	.22176	.16347	.01766	-.07241
SIPM	.59756	.72322	.46674	.24033	.44370	1.00000	.15175	.08625	.20342	.05719	-.03432
UCRMATH	.10950	.20235	.02094	.06060	.15819	.15175	1.00000	.15141	.11955	.20083	.03183
IAMATH	.16362	.14873	.11683	.01812	.22176	.08625	.15141	1.00000	.24383	.24691	.02593
IDMMATH	.10836	.09788	.18035	.20125	.16347	.20342	.11955	.24383	1.00000	.19905	-.06153
IEMATH	.10236	.02448	.03116	-.05289	.01766	.05719	.20083	.24691	.19905	1.00000	.01654
ACH.-MATH	.13695	-.00995	-.06048	-.01086	-.07241	-.03432	.03183	.02593	-.06153	.01654	1.00000

Table 3

Means and Standard Deviations of

Variables Used in the Analysis

Variable	Mean	Standard Deviation
Organizational		
IOR	20.49	6.81
IOS	20.52	3.80
COS	58.18	9.91
GSB	3.84	.62
INDIV	3.16	.18
SIPM	62.44	12.26
Second-grade instructional		
UCR	39.53	9.61
IA	7.18	1.28
IDM	8.33	2.60
IE	29.58	6.12
Fifth-grade instructional		
UCR	40.15	9.53
IA	7.39	1.16
IDM	8.09	2.55
IE	28.54	7.80
Second-grade mathematics total	-.16	3.66
Fifth-grade mathematics total	-.10	4.60

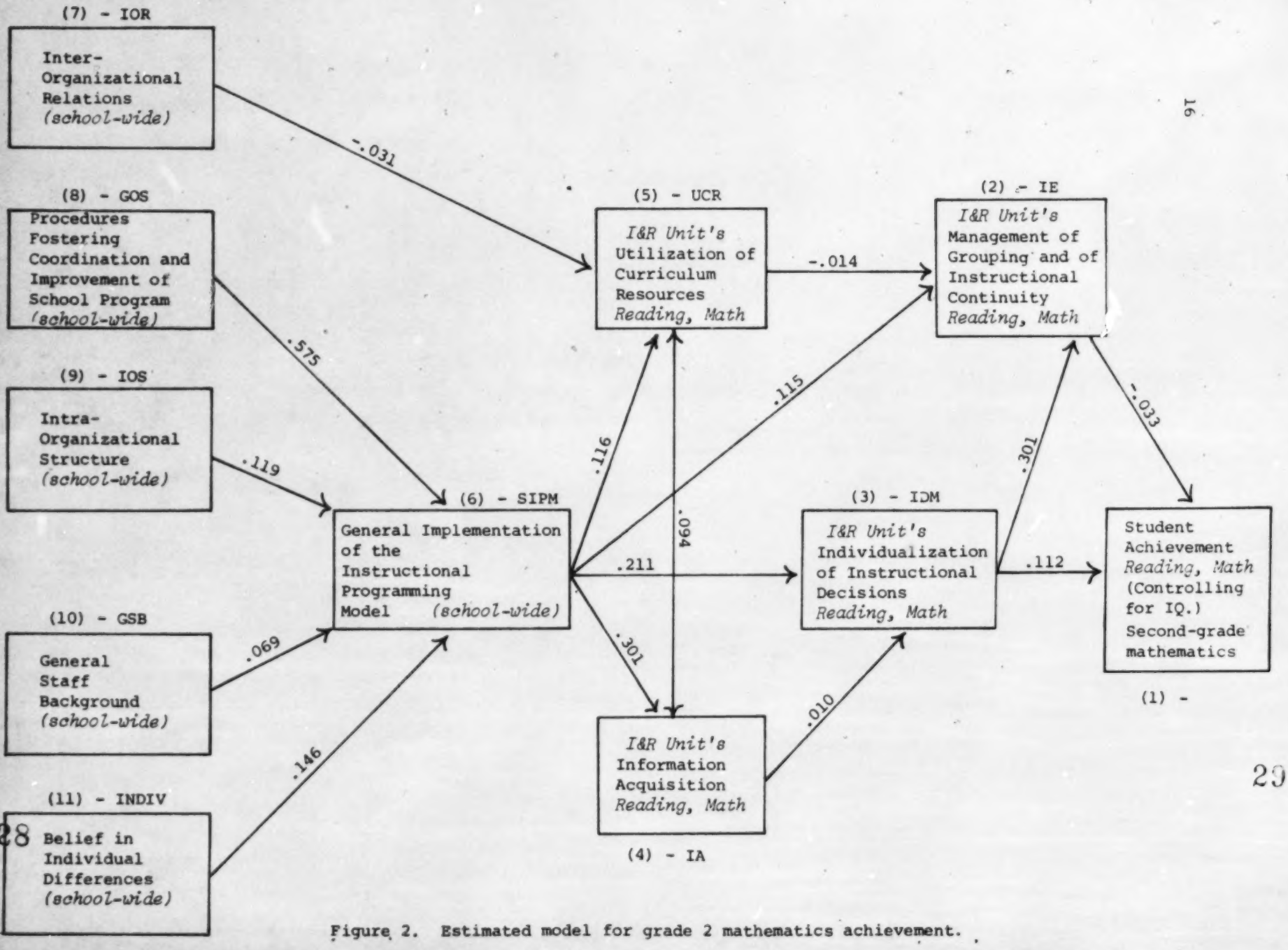

Figure 2. Estimated model for grade 2 mathematics achievement.

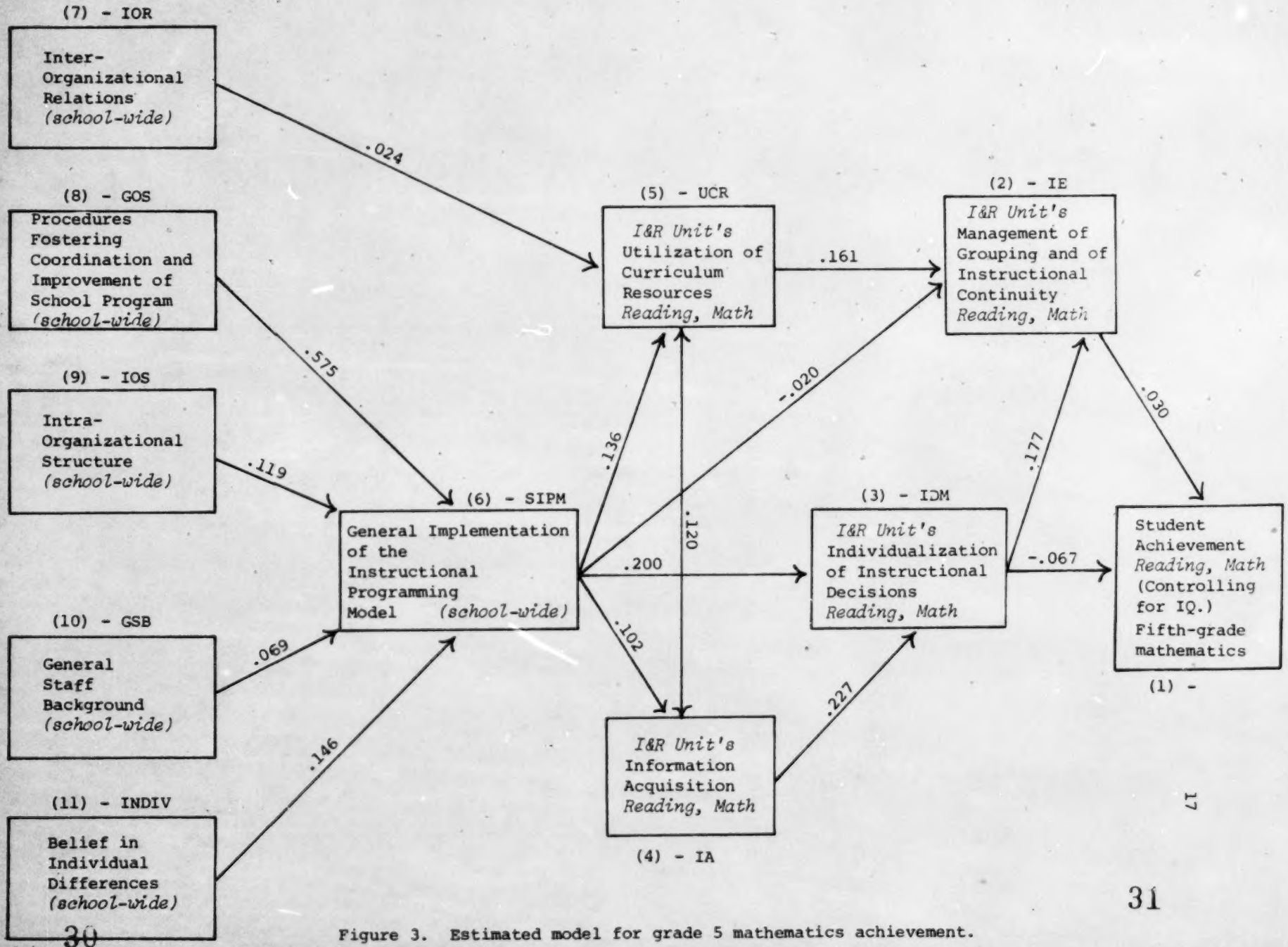

Figure 3. Estimated model for grade 5 mathematics achievement.

links whose path coefficients did not differ statistically from zero were dropped from the model. In effect, such a procedure tests whether a variable used as a predictor accounts for any unique variance in the dependent variable.

Paths theoretically precluded from the a priori model were hypothesized to make no increment to $\underline{R}^2$ beyond that obtained by using the paths included in the model. The omitted paths of greatest interest lead directly from remote causes to effects--bypassing theorized mediators. When the addition of a direct path from a remote cause--a path theoretically precluded heretofore--was statistically significant, the model was deemed insufficient to explain the observed relationship between the effect and that remote cause. Figures 4 and 5 show the empirically revised (fitted) model. Also shown are equations for the hypothesized model and for the fitted model.

However, when predictors are interrelated--as they are here--interpretation of the tests for particular path coefficients can easily be misleading (see Goldberger, 1964; Gordon, 1968). As Tables 1 and 2 make evident, the organizational features in this study were interrelated, as were the instructional variables; therefore, the substantive interpretation of individual path coefficients becomes ambiguous. For this reason we are being deliberately wary about discussing individual regression coefficients.

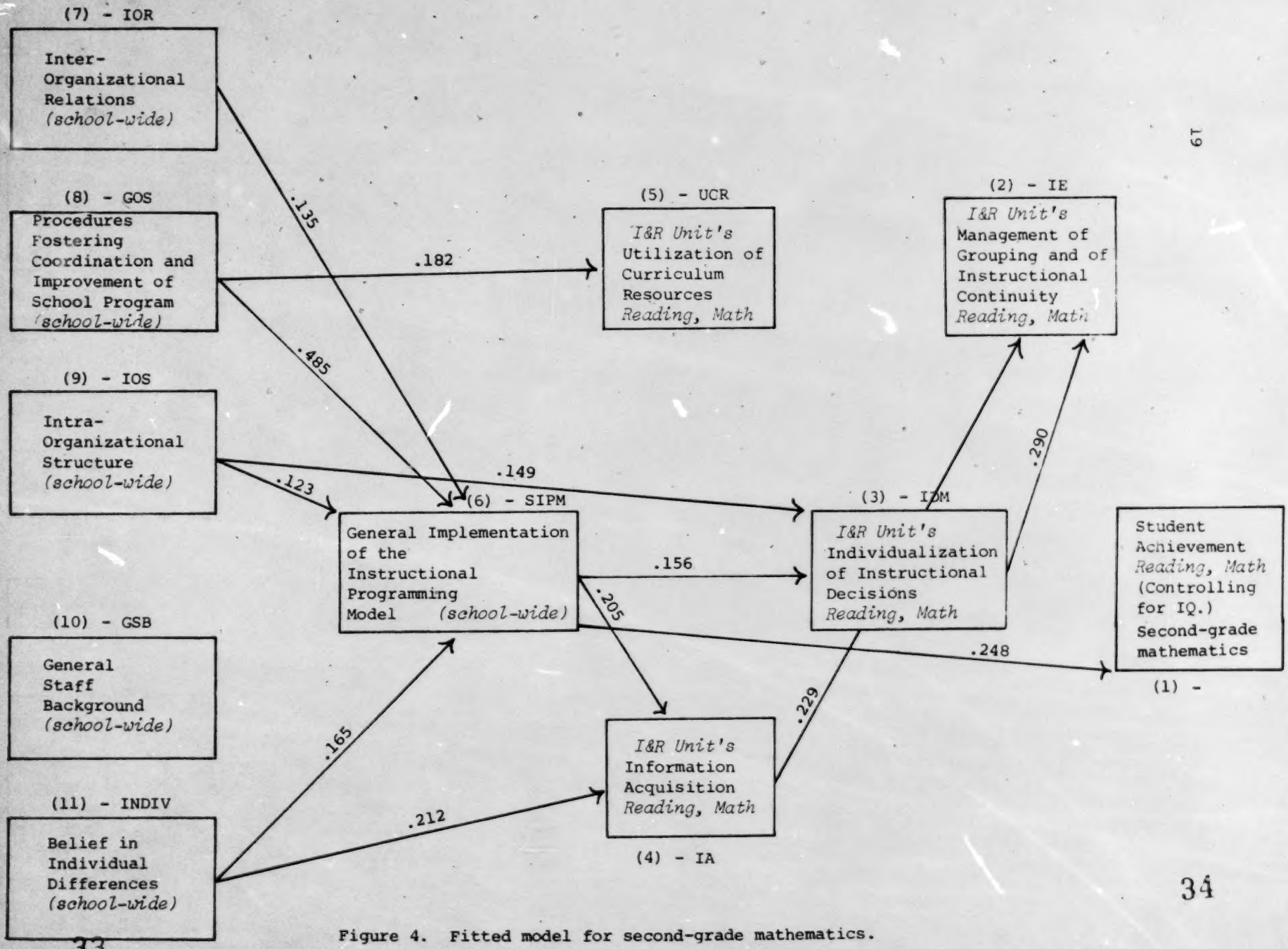

Figure 4. Fitted model for second-grade mathematics.

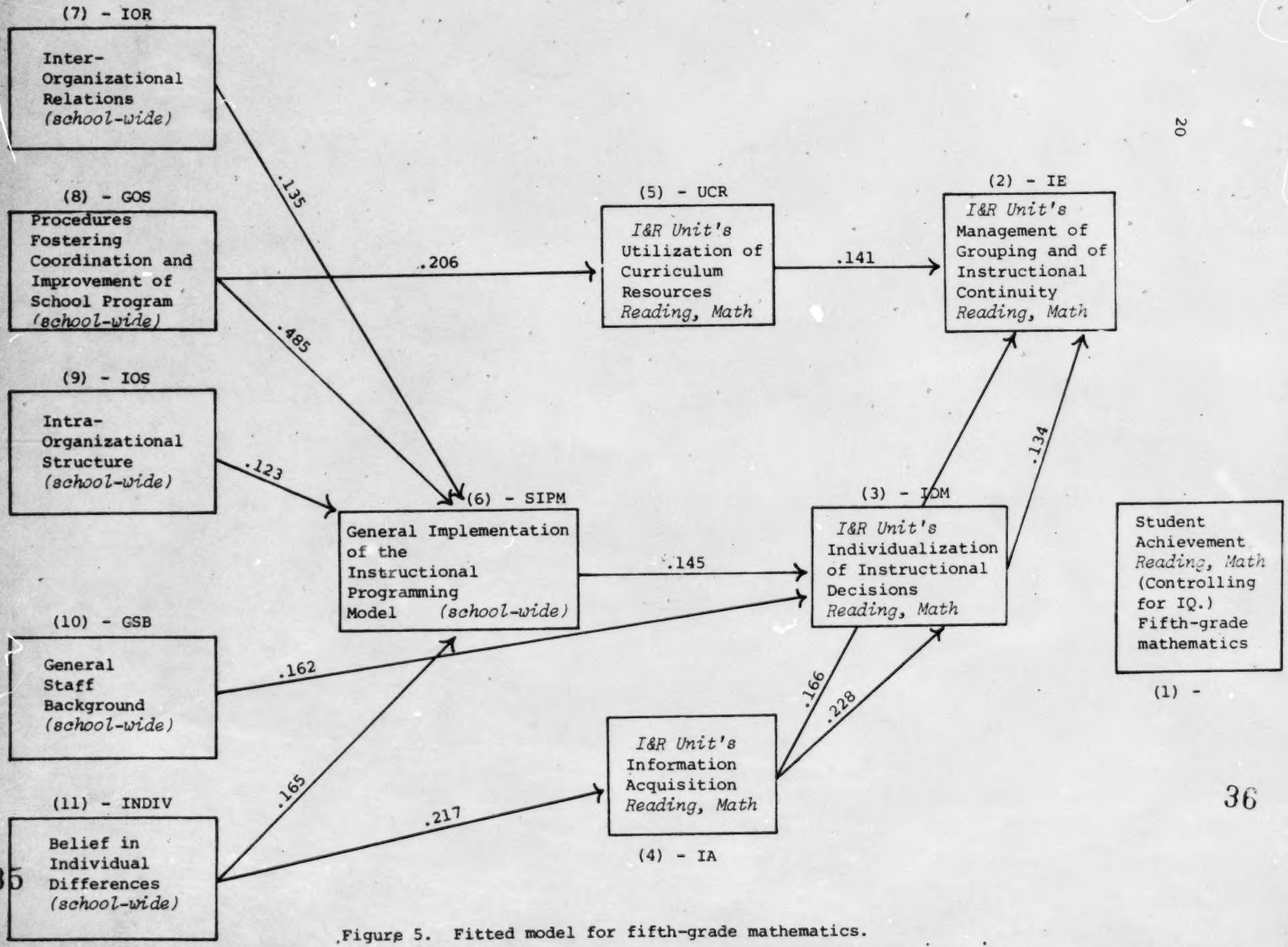

Figure 5. Fitted model for fifth-grade mathematics.

The results of the regression analysis previously discussed were used, nevertheless, to interpret the interrelationships for the set of organizational variables and among the instructional variables. However, to get a clearer understanding of the relationships between the organizational and instructional variables, another type of analysis was used. We created new variables that were unrelated to each other and were linear combinations of the initial set of predictors. This approach can be useful if the variables (factors) created can be defined in a substantively meaningful way. The approach proved useful in this study.

Equations for HYPOTHESIZED MODEL

(For both second- and fifth-grade mathematics)

$$\hat{MATH} = P_{12}\ IE + P_{13}\ IDM$$

$$\hat{IE} = P_{23}\ IDM + P_{25}\ UCR + P_{26}\ SIPM$$

$$\hat{IDM} = P_{34}\ IA + P_{36}\ SIPM$$

$$\hat{IA} = P_{46}\ SIPM$$

$$\hat{UCR} = P_{54}\ IA + P_{56}\ SIPM + P_{57}\ IOR$$

$$\hat{SIPM} = P_{68}\ GOS + P_{69}\ IOS + P_{6-10}\ GSB + P_{6-11}\ INDIV$$

Equations for FITTED MODEL

(For second-grade mathematics)

$$\hat{MATH} = .248 * SIPM$$

$$\hat{IE} = .290 * IDM + .229 * IA$$

$\hat{IDM}$ = .156 * SIPM + .149 * CIOS

$\hat{IA}$ = .205 * SIPM + .212 * INDIV

$\hat{UCR}$ = .182 * GOS

$\hat{SIPM}$ = .485 * GOS + .165 * INDIV + .135 * IOR + .123 * IOS

Equations for FITTED MODEL

(For fifth-grade mathematics)

$\hat{MATH}$ = NO VARIABLES PREDICT MATH

$\hat{IE}$ = .134 * IDM + .141 * UCR + .166 * IA

$\hat{IDM}$ = .145 * SIPM + .228 * IA + .162 * GSB

$\hat{IA}$ = .217 * INDIV

$\hat{UCR}$ = .206 * GOS

$\hat{SIPM}$ = .485 * GOS + .165 * INDIV + .135 * IOR + .123 * IOS

The six organizational variables in the model were transformed through principal components factor analysis into a set of six uncorrelated (orthogonal) factors. Varimax rotation was used on the full set of principal components. The net effect of performing these transformations was to impose orthogonality on the set of six predictors, while preserving as closely as possible a one-to-one correspondence between variables and principal components. In other words, each of the six factors is a good proxy for one of the variables and is insufficiently related to the other five variables. Correlations

between the six orthogonal factors and the six untransformed variables are given in Table 4; these correlations are also known as factor loadings.

The four instructional variables in the model were similarly transformed through principal components factor analysis into a set of four uncorrelated (orthogonal) factors. Correlations between the second-grade mathematics untransformed variables and the orthogonal factors are given in Table 5. Correlations between the fifth-grade mathematics untransformed variables and the orthogonal factors are given in Table 6.

Correlations between the organizational factors of Table 4 and the grade 2 mathematics instructional factors of Table 5 are given in Table 7. Correlations between the organizational factors and the grade 5 mathematics instructional factors of Table 6 are given in Table 8. As can be seen from Tables 7 and 8, the correlations between the organizational and instructional factors are generally nonsignificant; when significant, they are nevertheless weak. None of these weak correlations considered in isolation deserves much attention. Consequently, our discussion is limited to those correlations that were statistically significant in both grades 2 and 5.

Interpretation

There are five basic findings of this study:

1. Neither organizational variables nor measures of instructional practices are correlated beyond a trivial level with the measure of mathematics achievement.

Table 4

Correlations Between the Organizational Variables and their Varimax-rotated Principle Components

Variables	Factors					
	GOSFAC	IORFAC	IPMFAC	INDIVFAC	IOSFAC	GSBFAC
GOS	.76	.38	.36	.23	.29	.10
IOR	.24	.89	.25	.20	.20	.09
IPM	.25	.26	.87	.22	.23	.12
INDIV	.14	.17	.17	.96	.06	.06
IOS	.06	.18	.19	.06	.94	.13
GSB	.06	.08	.09	.06	.11	.98
Eigenvalue of factor	.72	1.07	1.02	1.07	1.08	1.01

Table 5

Correlations Between Instructional Feature Variables and their Varimax-rotated Principle Components: Grade 2 Mathematics

	Factors			
Variables	IEFAC	UCRFAC	IAFAC	IDMFAC
IE	.98	.00	.14	.16
UCR	.00	1.00	.06	.03
IA	.13	.06	.99	.07
IDM	.16	.03	.07	.98
Eigenvalue of factor	1.00	1.00	1.00	1.00

Table 6

Correlations Between Instructional Feature Variables and their Varimax-rotated Principle Components: Grade 5 Mathematics

	Factors			
Variables	UCRFAC	IEFAC	IAFAC	IDMFAC
UCR	.99	.09	.06	.06
IE	.08	.99	.10	.09
IA	.06	.10	.99	.12
IDM	.06	.09	.12	.99
Eigenvalue of factor	1.00	1.00	1.00	1.00

Table 7

Correlations of Organizational and

Instructional Factors: Grade 2 Mathematics

	Instructional			
Organizational	UCRFAC	IEFAC	IAFAC	IDMFAC
IOSFAC	-.01	.06	.06	.19**
IORFAC	-.04	-.05	.03	-.05
INDIVFAC	.11	.06	.24**	.06
SIPMFAC	.05	.11	.19**	.13*
GSBFAC	.06	.01	.03	.04
GOSFAC	.17*	.00	.10	.15*

*$p < .05$.

**$p < .01$.

Table 8

Correlations of Organizational and

Instructional Factors: Grade 5 Mathematics

	Instructional			
Organizational	UCRFAC	IEFAC	IAFAC	IDMFAC
IOSFAC	-.02	-.03	.10	.15*
IORFAC	.03	.09	.10	-.01
INDIVFAC	.11	-.03	.18*	.13
SIPMFAC	.09	.02	-.04	.17*
GSBFAC	.01	-.08	-.02	.17*
GOSFAC	.17*	-.06	.07	-.07

*$p < .05$.

**$p < .01$.

2. All of the organizational measures are correlated with school-wide implementation of the IPM (SIPM) and all of them except General Staff Background (GSB) account for unique variance in SIPM when included in a simultaneous regression equation.

3. Both School-wide Implementation of the IPM (SIPM) and the school's Intra-organizational Structure (IOS) account for unique variance in the second- and fifth-grade I&R units' Individualization of Instructional Decision (IDM).

4. Schools with many staff members who believe individual differences are instructionally important (INDIV) have I&R units that collect more information on individual students (IA).

5. The instructional practices IE, IDM, and IA are interrelated in both grades 2 and 5, but are unrelated to UCR.

The first of these findings was discussed earlier. The second finding--that school-wide implementation of the IPM is correlated with organizational variables--is consistent with the a priori model, which asserts that the organizational characteristics measured by IOR, GOS, and IOS facilitate implementation of the IPM. This finding supports the notion that organizational change is necessary to augment flexibility in instructional programming. However, as the third finding suggests, there appears to be only a weak link between having the surface trappings of flexibility (SIPM and IOS) and actually using that flexibility to individualize instructional decisions (IDM).

The fourth finding--that staff members who believe individual differences are instructionally important have I&R units with more information on individual students--suggests teachers' beliefs about the instructional relevance of individual differences cannot be ignored in an educational program that stresses individual differences.

The fifth finding--that three instructional practices (IA, IE, and IDM) are interrelated--suggests that individualized decisions are more likely to occur if teachers have routine procedures for gathering information about individual children.

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